<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>9:00 AM-Noon</td>
<td>Registration</td>
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<tr>
<td>1:00-2:00 PM</td>
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<tr>
<td>2:00 PM</td>
<td>Welcome/Opening Remarks (W. Schimmerling, J. M. Slater)</td>
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<tr>
<td>2:10 PM</td>
<td>Introduction and Announcements (G. A. Nelson)</td>
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<tr>
<td>2:20-2:35 PM</td>
<td>Workshop Overview (R. Turner)</td>
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<td>2:35-3:05 PM</td>
<td>Solar Particle Events -- Current Theories and Observations (A. Kiplinger)</td>
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<td>3:05-3:35 PM</td>
<td>Solar Particle Event Forecasting (G. Heckman)</td>
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<td>3:35-3:50 PM</td>
<td>Workshop Findings (R. Turner)</td>
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<tr>
<td>3:50-4:00 PM</td>
<td>Break</td>
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<tr>
<td>4:00-4:15 PM</td>
<td>Programmatic Requirements for Spaceflight Experiments (W. Schimmerling)</td>
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<tr>
<td>4:15-4:30 PM</td>
<td>Flight Experiments: Opportunities, Requirements and Constraints (R. Arno)</td>
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<tr>
<td>4:30-4:45 PM</td>
<td>Spaceflight Validation of Radiation Risk: Scientific Requirements and Approach (V. Petrov)</td>
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<td>4:45-5:00 PM</td>
<td>TBD (V. Bogomolov)</td>
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<tr>
<td>5:00-5:15 PM</td>
<td>Spaceflight Validation of Radiation Risk: Spacecraft Design and Mission Analysis (R. Spann)</td>
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<tr>
<td>5:15-6:00 PM</td>
<td>Discussion</td>
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<tr>
<td>6:30-8:30 PM</td>
<td>Reception</td>
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**Wednesday, May 15**

**Location:** Loma Linda University Medical Center  
(Buses to LLUMC leave Mission Inn at 8:00 AM)

## Session III  
**Animal and Tissue Radiobiology**

<table>
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<tr>
<th>Time</th>
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| 8:30-8:45 AM | Animal Experimentation at the Frontiers of Molecular, Cellular and Tissue Radiobiology  
(H. R. Warner, A. Chatterjee and M. J. Bissell) |
| 8:45-9:00 AM | Issues on Early Biological Response to Space Radiations in NASA-Related Programs (J. W. Wilson, F. A. Cucinotta, J. L. Shinn, T. D. Jones and C. K. Chang) |
| 9:00-9:15 AM | Cosmic Radiation ($^{56}$Fe Particles) Effects on Signal Transduction in the CNS: Implications for Immediate or Delayed Motor and Cognitive Deficits as a Function of Age (J. A. Joseph, S. Erate and B. M. Rabin) |
| 9:30-9:45 AM | Assessment of Radiation-Induced Carcinogenesis by Molecular Biomarkers: Oncogene Activation and Gene Expression (A. C. Miller, T. Whittaker, V. Srinivasan, E. P. Clark and E. J. Ainsworth) |
| 9:45-10:00 AM | Assessment of Radiation Damage in the Rodent Lens Epithelium Following Irradiations with 155 MeV Protons, 600 MeV/u $^{56}$Fe, and 250 kVp X-rays (A. L. Lindgren, A. L. Anderson, J. A. Archambeau, M. F. Moyers and E. J. Ainsworth) |
| 10:00-10:30 AM | Break |
| 10:30-10:45 AM | Effects of Heavy Ions on the DNA in the Photoreceptor Cells of the Rabbit: An Overview of Two Decades of Life Span Experiments (J. Lett and G. R. Williams) |
| 10:45-11:00 AM | Human Lens Epithelial (HLE) Cells: An *in vitro* Model to Assess Proton-Induced Radiation Effects (E. A. Blakely, B. S. Kaur, K. A. Bjornstad and G. Aragon) |
| 11:00-11:30 AM | Experimental Proton Irradiations at Loma Linda University Medical Center (M. F. Moyers, G. B. Coutrakon, D. W. Miller, J. V. Siebers, G. A. Nelson and J. M. Slater) |
| 11:30-Noon | Introduction to the Loma Linda University Proton Treatment Center (J. M. Slater) |
| Noon-1:40 PM | Lunch  
Tour of Loma Linda University Proton Treatment Center  
(Buses return to Mission Inn at 1:40 PM) |
Session IV
Chair: W. Schimmerling

2:00-2:20 PM NCRP Report (W. Sinclair)
2:20-2:40 PM NRC Report (R. Setlow)
2:40-3:10 PM Implementation of the ALARA Principle on the Mir Station (V. Petrov)
3:10-4:10 PM Highlights of Radiation NSCORT Activities (A. Chatterjee)
4:10-4:30 PM Break

Session V
Workshop Report - Shielding Strategies for Human Space Exploration
Chair: J. Miller

4:45-4:55 PM Recommendations of Working Group on Materials for Space Use and Space Radiation Protection (J. W. Wilson)
5:10-5:30 PM Panel Discussion
### Session VI  
**BNL AGS**

#### 8:30-9:00 AM
**AGS and BNL-1 Overview** (J. Miller, M. Vazquez)

### BNL-1: DNA Damage and Repair; Mutation

**Chair:** A. Kronenberg  
**Co-Chair:** B. M. Sutherland

#### 9:00-9:15 AM
**DNA Double-Strand Breaks Induced by High Energy Fe Ions. Non-Random Initial Distribution. Repair of Correct and Incorrect Ends**  
(B. Rydberg, M. Löbrich and P. K. Cooper)

#### 9:15-9:30 AM
**Quantitation of Double Strand Breaks Induced in Human DNA by CentiGray Doses of $^{56}$Fe (1GeV/nucleon)**  
(B. M. Sutherland, P. V. Bennett and J. C. Sutherland)

#### 9:30-9:45 AM
**The Fidelity of DNA Strand-Break Repair Pathways in Human Cells**  
(T. J. Jorgensen, M. E. Dar and T. A. Winters)

#### 9:45-10:00 AM
**Effect of p53 Status on Cell Killing and Mutation Induction Following Low Fluence Exposure to 1090 MeV/amu Fe Ions**  
(A. Kronenberg, S. Gauny and C. Cherbonnel-Lasserre)

#### 10:00-10:15 AM
**DNA Double-Strand Break Repair and High LET Radiation-Induced Genomic Instability**  
(D. J. Chen, B. Marrone, C. L. Limoli and W. R. Morgan)

#### 10:15-10:30 AM
**Mutagenesis by 1 GeV/nucleon Iron Particles in the Nematode C. elegans**  

#### 10:30-10:50 AM
**Break**

### BNL-1: Cell, Tissue and Animal Radiobiology

**Chair:** M. Vazquez  
**Co-Chair:** L. H. Lutze-Mann

#### 10:50-11:05 AM
**Cellular Responses to 1 GeV/u Iron Particles: Lethal and Cytogenetic Effects**  
(T. C. Yang, H. Wu, K. George, M. Durante and L. Craise)

#### 11:05-11:20 AM
**The Effect of Exposure to Iron Ions on Different Endpoints in Transgenic Mice**  
(L. H. Lutze-Mann, I. P. Samuels, R. A. Winegar, M. Ramsey and J. D. Tucker)

#### 11:20-11:35 AM
**High LET-Induced Microenvironment Alterations in the Murine Mammary Gland**  
(M. H. Barcellos-Hoff, E. J. Ehrhart and E. L. Gillette)

#### 11:35-11:50 AM
**Relationship Between the Behavioral Toxicity of $^{56}$Fe Particles and LET**  
(B. M. Rabin and J. Joseph)

#### 11:50 AM-1:00 PM
**Lunch**

#### 1:00-1:30 PM
**BNL-1 Biology Summary** (A. Kronenberg)
BNL-1: Physics and Dosimetry
Chair: J. Miller
Co-Chair: T. Borak

1:30-1:45 PM AGS Machine and Radiobiology Beamline Status (D. Lazarus)

1:45-2:00 PM AGS Radiobiology Dosimetry System - Results from October 1995 (L. Heilbronn, K. Frankel, B. Ludewigt, J. Miller, M. Nyman, R. P. Singh and C. J. Zeitlin)


2:30-2:45 PM Microdosimetry Measurements of Particle Fragments from 1 GeV/amu Fe Nuclei in Thick Targets (T. B. Borak, S. E. Rademacher, L. Heilbronn, J. Miller and C. J. Zeitlin)

BNL-2

2:45-3:00 PM AGS Radiobiology Facility Status (M. Vazquez, J. Miller)

3:00-3:15 PM Break

Session VII  Space Measurements
Chair: J. Kiefer
Co-chair: E. V. Benton

3:15-3:30 PM Repair of Radiation Damage Under Microgravity - The SMM-3 Experience (H.-D. Pross and J. Kiefer)


3:45-4:00 PM 3D ORAM Dosimeter for Space Radiation Environments (D. Emfietzoglou and M. Moscovitch)


4:30-6:00 PM Users’ Meeting for Current and Prospective Investigators at the BNL-AGS and LLUMC Proton Facility

6:30-7:00 PM Cocktails

7:00-10:00 PM Banquet
Friday, May 17

Session VIII  Cell and Molecular Radiobiology I.
Chair: B. M. Sutherland
Co-chair: T. C. Yang

8:30-9:10 AM  DNA Strand Breakage and Rejoining (L. F. Povirk, X.-Y. Gu and R. A. O. Bennett)

9:10-9:50 AM  Clusters of DNA Damage and Chromatin Structure (A. Chatterjee)

9:50-10:05 AM  Mutation Induction by Energetic Oxygen, Neon, Nickel, Gold and Lead Ions (J. Kiefer, U. Stoll and P. Schmitt)

10:05-10:20 AM  Measuring the Spectrum of Mutation Induced by HZE and low LET Irradiations in the Human-Hamster Hybrid Cell Line ALC (S. M. Kraemer, A. Kronenberg, A. Ueno and C. Waldren)


10:35-10:50 AM  Break

Session IX  Cell and Molecular Radiobiology II.
Chair: T. C. Yang
Co-Chair: B. M. Sutherland

10:50-11:05 AM  Malignant Transformation of Human Bronchial Epithelial Cells by High LET Radiation T. K. Hei, C. Q. Piao, T. Pandita, E. J. Hall and C. Waldren

11:05-11:20 AM  Progress on Cell-Cycle Protein Localization: Addition of DNA Damage Localization After Alpha Particle Traversal N. E. Metting

11:20-11:35 AM  Thiolamine Modulations of Radiation-Induced Apoptosis R. L. Warters and J. C. Roberts

11:35-11:50 AM  A Biophysical Model for the LET-Dependent Chromosome Exchange H. Wu and T. Yang

11:50 AM-12:05 PM  A Molecular Theory for Cell-Cycle Progression and Radiation-Induced G1 Arrest as a Result of P53 Regulation of Cyclin Kinase Inhibitor P21 (F. A. Cucinotta, J. F. Dicello, J. R. Williams, J. W. Wilson and M. H. Mabry)


12:20-12:30 PM  Closing Remarks (W. Schimmerling)

12:30 PM  Adjourn